



Star and Planet Formation through the WorldWide Telescope

Citation

Goodman, Alyssa. 2013. Star and Planet Formation through the WorldWide Telescope. Poster presented at Protostars and Planets VI, Heidelberg, Germany, July 15-20, 2013.

Published Version

<http://www.mpia-hd.mpg.de/homes/ppvi/posters/2S003.html>

Permanent link

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How can WWT be helpful in Research?

The screenshot displays the Night Sky Live application interface. At the top, a navigation bar includes tabs for Explore, Guided Tours, Search, Community, Telescope, View, and Settings. Below this, a 'Collections' section shows 'All-Sky Surveys' with thumbnails for Digitized Sky Survey, NGC, VIA, Low-Redshift, WMAP, ILC, 5-Year, SFD Dust Map, GL, IRIS-Improved, 2MASS, Two Micron, Hydrogen Alpha, and SDSS Sloan Digital Sky Survey. A central 'Finder Scope' window displays details for 'Classifications: Galaxy in Ursa Major' and 'Names: M81, NGC 3031, Bode's Galaxy', along with fields for Magnitude, Distance, Rise, Transit, and Set. Below the main view, a 'Look At' section offers options like Sky, Imagery, Image Cross, Research, and Show Object. The bottom of the interface features a 'Sky' panel with 'Astronomy' and 'Everyday' categories, and a 'Ursa Major' panel with a star map and a globe. Callouts highlight various features: 'Seamlessly explore imagery from the best ground and space-based telescopes in the world' points to the Digitized Sky Survey thumbnail; 'Expert led Tours of' points to the Guided Tours tab; 'Control time to study how the night sky changes' points to the View tab; 'View and compare imagery from across the electromagnetic spectrum' points to the Hydrogen Alpha thumbnail; 'Context bar shows items of interest in current field of view' points to the Finder Scope details; 'Context globe shows where you're looking' points to the globe in the Ursa Major panel; 'Much more than "just" the sky at night! 3D features can take you to other planets,' points to the Sky panel; and 'Finder Scope links to Wikipedia, ADS, SIMBAD, and SDSS, so you can learn' points to the Finder Scope details.

Seamlessly explore imagery from the best ground and space-based telescopes in the world

Expert led Tours of

Control time to study how the night sky changes

View and compare imagery from across the electromagnetic spectrum

Context bar shows items of interest in current field of view

Context globe shows where you're looking

Much more than "just" the sky at night! 3D features can take you to other planets,

Finder Scope links to Wikipedia, ADS, SIMBAD, and SDSS, so you can learn



*find publications in area of interest directly from the FinderScope;
view regions returned in ADS Labs search in WWT with one-click*

find data in your area of interest directly from the FinderScope

Add and overlay your own images and catalogs
in FITS, ASCII, JPEG or XLS formats

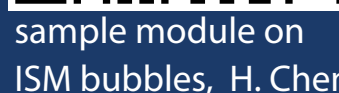
DSS, SFD, 2MASS, GLIMPSE, MIPS GAL, WISE, HST, VLA, ROSAT, Spitzer, Chandra, & >40 more

 SAMP-compatibility: live links to TOPCAT, Aladin & ds9

Modular Learning



*WorldWide Telescope Ambassadors are PhD-level scientists--like you!--who use WWT to teach science in school, science fair, and other community settings. **Contact us to sign up or learn more!***



Within WWT, anyone can create a **scripted path through the program** to “talk about” celestial phenomena with others. Tour files can be created and exchanged just like PPT files.



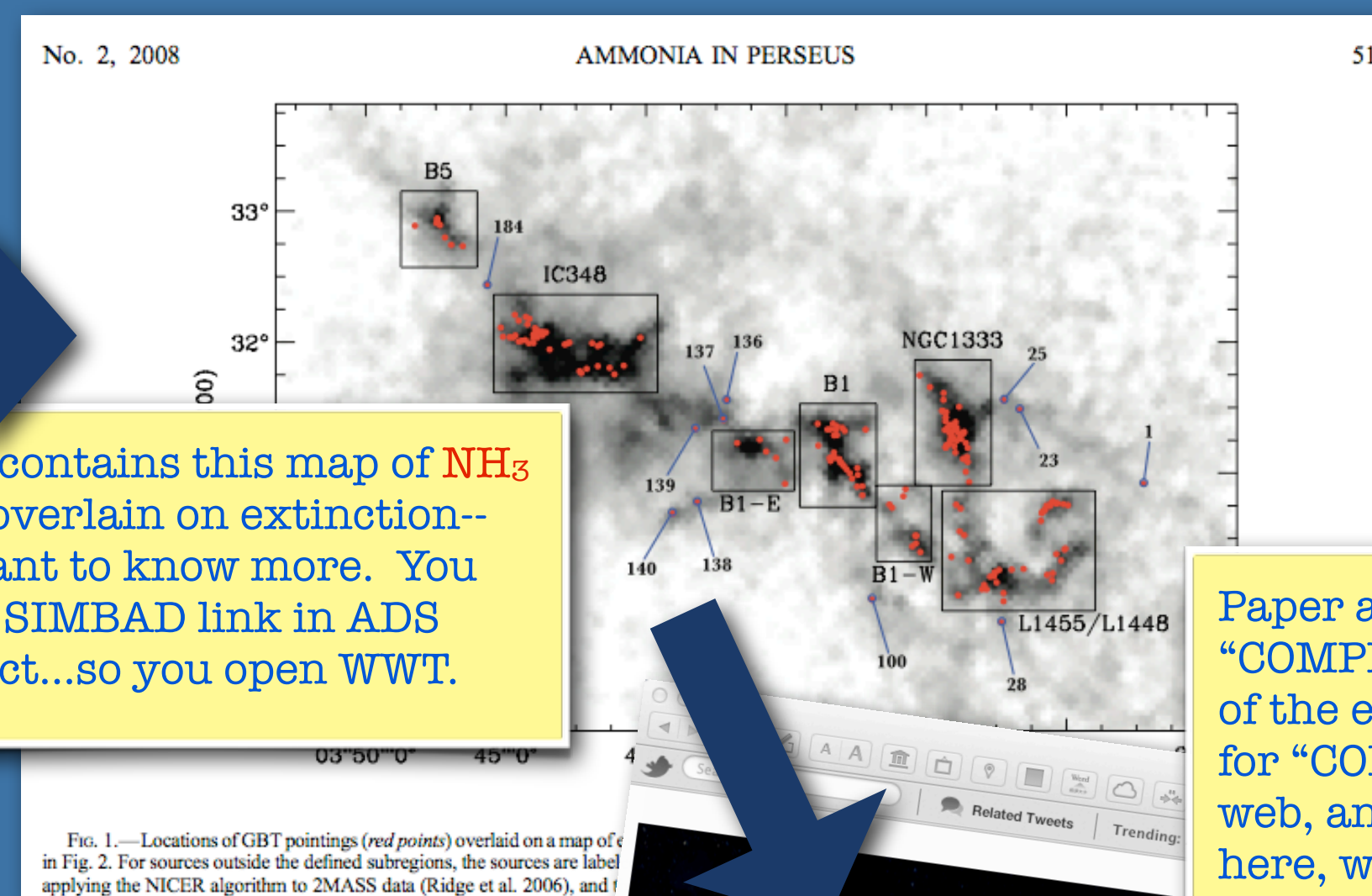
New efforts like **edX** offer opportunities to create and “massively” **distribute educational materials online**. [Link here](#) shows a sample learning module based on a WWT Tour created in a graduate ISM course at Harvard.

Research shows that combined “virtual” and physical experiences enhance learning. WWT can show **context and scales** that traditional labs cannot show on their own.

*WWT runs on **Mac or PC in a web browser**, or in Windows, as a standalone application. It also runs as a web API using any operating system.*



For Example...consider an
ADS Labs Search for
“Ammonia in Perseus”



Paper contains this map of **NICOREs** overlain on extinction--you want to know more. You notice **SIMBAD** link in ADS abstract...so you open **WWT**.

Paper also mentions the “COMPLETE” survey as the source of the extinction map. You search for “COMPLETE” survey on the web, and find the data tool shown here, which uses a WWT html5 API to offer you overlays and downloads of COMPLETE data.

For Example...consider an ADS Labs Search for “Ammonia in Perseus”

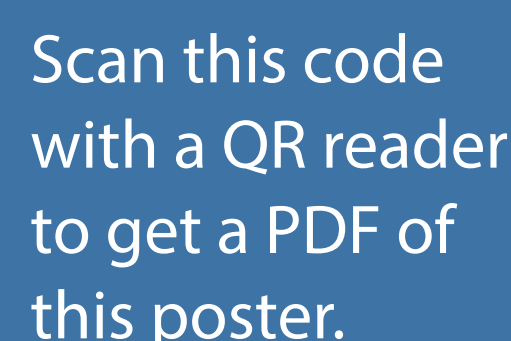
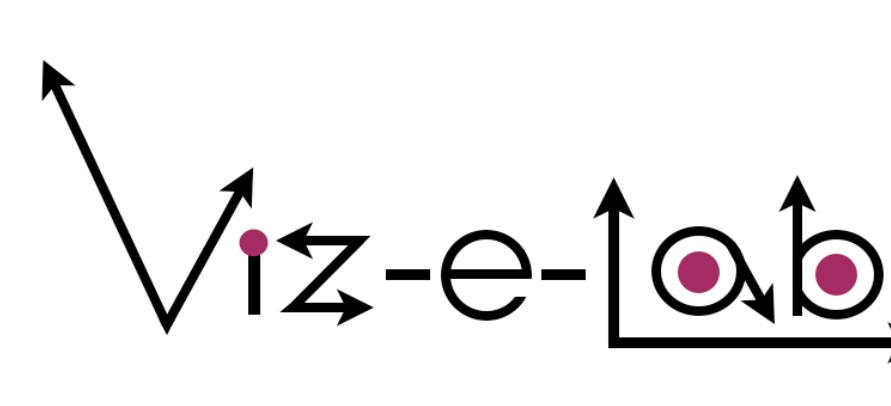
ADS Labs search shows
“Atlas” paper by Rosolowsky et
al. to be most relevant...click gives
abstract

ADS Labs link offers contextual view of most commonly mentioned regions, example here shows NGC 1333 Spitzer view on all-sky background (in Safari browser)

From this point, you could return to a similar “ADS-like” starting point with any of these other publications. But, it’s important to realize that this “example” could have started at any point along the arrow-led chain shown. WWT is like a browser--no linearity of research path is needed!

Using the “Finder Scope” in WWT, you right-click (shift-click on the web) on a spot of interest, to find out what other papers in ADS, or data in SIMBAD, might be of interest. Example here shows ADS publication list for area near NGC1333.

Now, you have the COMPLETE data at your disposal, so you overlay its ^{13}CO data on the all-sky IRIS map in WWT. You click **“VO Cone Search”** and find the NH_3 catalog in SIMBAD, just like ADS promised. A couple of clicks later, you’ve overlain the NH_3 catalog on the ^{13}CO , all in the context of IRIS.

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